**Mark Scheme**

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Q1. (Total 2 marks)

* A satellite that has been stationed in space for the purpose of providing telecommunications;
* Commonly used for mobile phone signals, weather tracking, or broadcasting television programs;
* Artificial satellites that relay receive signals from an earth station and then retransmit the signal to other earth stations. They commonly move in a geostationary orbit.

Q2. (Total 4 marks)

Advantages:

* used for long distance communication
* high speed data transmission
* many reciver stations can receive signal from the same sender station
* Flexible (if transparent transponders)
* Easy to install new circuits
* Circuit costs independent of distance
* Broadcast possibilities
* Temporary applications (restoration)
* Niche applications
* Mobile applications (especially "fill-in")
* Terrestrial network "by-pass"
* Provision of service to remote or underdeveloped areas
* User has control over own network
* 1-for-N multipoint standby possibilities

Disadvantages:

* Large up front capital costs (space segment and launch)
* Terrestrial break even distance expanding (now approx. size of Europe)
* Interference and propagation
* Congestion of frequencies and orbit

Q3. (Total 4 marks)

* The satellites that aid the transmission of television signals have elliptical or geostationary orbits;
* The satellite television setup consists of a transmitting antenna or uplink satellite dishes pointed towards specific satellites;
* The satellite houses transponders, which receive signals from the antenna;
* The uplinked signals are tuned to a frequency range that corresponds to that of the transponders;
* The transponders retransmit the signals back to Earth;
* The signals that are transmitted by the transponders on a satellite are received by the parabolic dish;
* The signal is reflected towards the feed horn, a device mounted at the focal point of the dish;
* The satellite receiver sends the signals to the television set.

Q4. (Total 10 marks)

* Artificial satellite has limited functioning period which will crash on earth or remain around the orbit someday.
* Most dust around the earth orbits are wreck of artificial satellites;
* The satellite communication brought global communications
* The satellite communication brought satellite mapping
* The satellite communication has brought the invention of GPS/Navigation
* It helped on astrogeology to observe part of the universe.